INFUSION PUMP APPARATUS, METHOD AND SYSTEM

CROSS REFERENCE TO RELATED APPLICATION(S)

[0001] This application is a Divisional of U.S. patent application Ser. No. 15/692,716, filed Aug. 31, 2017 and entitled Infusion Pump Apparatus, Method and System, now U.S. Pat. No. 11,097,070, issued Aug. 24, 2021 (Attorney Docket No. V83), which is a Continuation of U.S. patent application Ser. No. 13/021,000, filed Feb. 4, 2011 and entitled Infusion Pump Apparatus, Method and System, now U.S. Pat. No. 9,750,896, issued Sep. 5, 2017 (Attorney Docket No. 154), which is a Non-Provisional Application which claims priority from U.S. Provisional Patent Application Ser. No. 61/301,957, filed Feb. 5, 2010 and entitled Infusion Pump Apparatus, Method and System (Attorney Docket No. H91), both of which are hereby incorporated herein by reference in their entirety.

TECHNICAL FIELD

[0002] The present disclosure relates to medical devices and more particularly, to an infusion pump apparatus, methods and systems.

BACKGROUND INFORMATION

[0003] Many potentially valuable medicines or compounds, including biologicals, are not orally active due to poor absorption, hepatic metabolism or other pharmacokinetic factors. Additionally, some therapeutic compounds, although they can be orally absorbed, are sometimes required to be administered so often it is difficult for a patient to maintain the desired schedule. In these cases, parenteral delivery is often employed or could be employed.

[0004] Effective parenteral routes of drug delivery, as well as other fluids and compounds, such as subcutaneous injection, intramuscular injection, and intravenous (IV) administration include puncture of the skin with a needle or stylet. Insulin is an example of a therapeutic fluid that is self-injected by millions of diabetic patients. Users of parenterally delivered drugs may benefit from a wearable device that would automatically deliver needed drugs/compounds over a period of time.

[0005] To this end, there have been efforts to design portable and wearable devices for the controlled release of therapeutics. Such devices are known to have a reservoir such as a cartridge, syringe, or bag, and to be electronically controlled. These devices suffer from a number of drawbacks including the malfunction rate. Reducing the size, weight and cost of these devices is also an ongoing challenge. Additionally, these devices often apply to the skin and pose the challenge of frequent re-location for application.

SUMMARY

[0006] In accordance with one aspect of the present invention, an infusion pump system is disclosed. The infusion pump system includes an infusion pump, and a controller device in wireless communication with the infusion pump including instructions for controlling the infusion pump wherein the instructions may be synchronized with a secure web portal.

[0007] Some embodiments of this aspect of the invention may include one or more of the following. Wherein the system further includes a continuous glucose monitor system including a transmitter wherein the transmitter in wireless communication with the controller device. Wherein the system further includes a blood glucose meter wherein the blood glucose meter in wireless communication with the controller device. Wherein the wireless communication is radio frequency communication. Wherein the infusion pump and the controller device are paired using near field communication. Wherein the system further includes at least one accelerometer.

[0008] In accordance with one aspect of the present invention, a medical device system is disclosed. The medical device system includes a first medical device and a second medical device in wireless communication with the first medical device, the second medical device including instructions for controlling the first medical device wherein the instructions may be synchronized with a secure web portal.

[0009] Some embodiments of this aspect of the invention may include one or more of the following. Wherein the first medical device is an infusion pump and the second medical device is a controller device. Wherein the infusion pump and the controller device are paired using near field communication. Wherein the first medical device is a continuous glucose monitor sensor and the second medical device is a controller device. Wherein the infusion pump and the controller device are paired using near field communication. Wherein the first medical device is a blood glucose meter and the second medical device is a controller device. Wherein the infusion pump and the controller device are paired using near field communication.

[0010] In accordance with one aspect of the present invention, a method for communication between two medical devices is disclosed. The method includes a first medical device sending a radio signal together with an acoustic signal to a second medical device, calculating the distance between the first medical device and the second medical device using the acoustic signal, determining whether the calculated distance exceeds a predetermined threshold, and if the calculated distance exceeds a predetermined threshold, notifying the user.

[0011] Some embodiments of this aspect of the invention may include one or more of the following. Wherein the first medical device is a controller and the second medical device is an infusion pump. Wherein the first medical device is a controller and the second medical device is a continuous glucose monitor sensor. Wherein the first medical device is a controller and the second medical device is a blood glucose meter.

[0012] These aspects of the invention are not meant to be exclusive and other features, aspects, and advantages of the present invention will be readily apparent to those of ordinary skill in the art when read in conjunction with the appended claims and accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] These and other features and advantages of the present invention will be better understood by reading the following detailed description, taken together with the drawings wherein:

[0014] FIGS. **1**A-**1**B are front and back isometric view of an embodiment of an infusion pump;

[0015] FIGS. **1**C-**1**E are side and front views of the infusion pump assembly of FIG. **1**A;